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INTERAGENCY RIPARIAN/WETLAND PLANT DEVELOPMENT PROJECT

SEMI-ANNUAL DECEMBER, 1994 - JULY, 1995 PROGRESS REPORT

Project Staff

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Introduction

This is the second of the new semi-annual progress reports that we have converted to. It was decided on April 21, 1994, that we would go from quarterly reports to semi-annual reports. We received no feedback from the sponsors on whether the new semi-annual reports are meeting everyone's needs. I am assuming that we are! Please let me know if they are not meeting your needs. This progress report covers from December, 1995 through June, 1995.

Mike Zierke, Riparian Technician is leaving!

Mike Zierke is leaving for Wyoming in July. His last day is July 8, 1995. Mike has been with the Project for 2 years now. He has handled most of the riparian studies, the collections for the various studies, and evaluations. He is a hard-working, positive-attitude, can-do type person who will be sorely missed at the Project. His interest and enthusiasm in riparian plants and communities has contributed significantly to success of this Project.

First Annual Newsletter Response

Our first issue of "View From A Wetland" was successful beyond our dreams. We mailed out several copies to cooperators and NRCS offices throughout our service area. Many of these people made copies and mailed them to friends and co-workers. The Manhattan (KS) PMC liked what they read so much that they reprinted parts of it in their news letter. Before long we were flooded with request for written and oral information from all over the country. We had 121 request for information about the Interagency Riparian/Wetland Development Project, our information series, and Tech Notes from persons in 25 states and 3 countries. We also had 234 request for oral information over the phone.

A breakdown of the requests and where they came from is included on the back of this progress report.

Riparian Zone Ecology, Restoration, and Management Workshops

In April, we offered 9 Riparian Zone Ecology workshops in Idaho for NRCS employees, other federal agencies, SCD's, state agencies, and private organizations in Idaho. We also offered 3 workshops in Oregon, and 1 in Washington. We also participated in a Corps of Engineers workshop in Denver where we demonstrated the Stinger and the Mini-Stinger, our transplanting techniques, and our cutting planting techniques. In all, we instructed over 100 students who work for the NRCS, 15 with SCDs, 86 with other federal agencies, 67 state employees, and 60 private company employees. These students came from 5 States.

We asked each Riparian Zone Workshop student to fill out an evaluation of the workshop. Based on these evaluations, the following information about the classroom course was determined:

120 total students in the classroom sessions

95 students responded to requests for evaluation of course

25 students did not respond

Overall reaction to the Course

Excellent-	58%
Good-	42%
Poor-	0%

Expectations of the Course

Excellent-	32%
Good-	63%
Poor-	5%

Length of Course

Too Short-	37%
Just Right-	59%
Too Long-	4%

Value of Course for Present Job

Excellent-	73%
Good-	26%
Poor-	1%

Value of Course for Future Duties

Excellent-	76%
Good-	23%
Poor-	1%

We also conducted 3 one day field sessions where the students actually applied some of the bioengineering techniques that were discussed in the classroom. We held 1 session in SE Idaho (Portneuf River near Lava, ID), 1 in SW Idaho (Trout Creek, NV enclosure), and 1 in north Idaho (Hatwai Creek near Lewiston, ID). We had a total of 64 students install brush revetments, brush matting, willow pole plantings, willow fascines, erosion control blankets, and vertical willow bundles. No evaluations were completed by the participants, but the verbal comments were enthusiastic. We also received excellent press coverage and the one near Lava, ID was on the agenda for the NRCS Division V meeting.

From the written comments on the back of the evaluation form, we definitely met a need expressed by the participants. The main suggestion on how to improve the course was to make it a 2 day course instead of a 1 day course. We did explain that we had originally proposed a 2 day course plus the field exercise, but the budget deficit reduced the training budget to a point where only 1 day was authorized.

A breakdown of the workshop participation is attached to the back of this progress report.

Greenhouse versus Live Transplant Professional Paper

The paper was originally written on a comparison of greenhouse propagated plants versus live transplants collected from natural wetland areas for presentation to the Society of Wetland Scientists Annual Meeting held in Portland, OR in June, 1994. Mike Sellers spent quite a bit of time cleaning it up and adding tables and charts to it. He did an excellent job. We issued the paper as Information Series # 7, April, 1995. Basically, we found that the greenhouse propagated plants spread better and faster than the live transplants. Live transplants tended to need about one month to recover from transplant shock. Live transplants tended to flower and seed more than the greenhouse propagated plants. The basic conclusion we came up with is that if you plan to collect live transplants from the wild, concentrate your collection efforts around the edges of the stand where the young plants are found rather than in the more mature parts of the stand. This will ensure more adventitious roots in the plugs, better spreading, and faster establishment.

You all should have gotten copies of this paper. If not, don't hesitate to contact us and we will send you a copy.

Calender Note - August Business Meeting and Tour

This year's Fall business meeting and tour will be August 30-31, 1995 at 8:30 am at the NRCS State Office conference room in Boise (on Elder Street). Please write this on your calender and plan to attend. If anyone has suggestions on what they would like to tour this year, please call and let us know.

Corvallis PMC Wetland Coordinated Study

The Aberdeen/Corvallis Eleocharis study is continuing, and beginning to provide us with some excellent data. For the July planting, rhizomatous spread is significantly better ($P < 0.05$) in the greenhouse propagated plants. The accession from the Little Hole area on American Falls Reservoir is performing much better than the rest of the accessions. The October planting has produced some very interesting results; frost action has pushed most of the plugs out of the ground. The Little Hole accession, however, had very few of its plugs pushed out. Also, for the Little Hole collection, the wild collected transplants had significantly less frost heaving damage than the greenhouse grown transplants ($P < 0.05$). The Little Hole accession is relatively low growing and fast spreading. There was no significant difference in frost damage between greenhouse and wild collected transplants for the remaining accessions, although, there seemed to be a trend towards better survival in the wild collected transplants. All of the plants from W. M. Finley NWR were pushed out by frost. However, the frost heaving did not kill any of the plants.

Elmore County Conservation District Riparian Demonstration Site

A riparian planting demonstration/training project has been proposed by the Elmore County Conservation District on Little Canyon Creek about 1/2 mile North of Glenns Ferry. We have made a couple of trips to the Mountain Home Field Office to discuss possible techniques and planting methods. We also met with various state and federal agencies to discuss their participation and permit requirements. At the present time, due to unrelated permit problems at the edge of the planting site, the planting is scheduled for this fall. We expect to use this as a training workshop similar to the April workshops. Anyone interested in attending this workshop should call and let us know.

Nature Conservancy Constructed Wetland System, Hagerman, ID

Northside Canal Co has completed deepening the deep water pond, constructing the final filter, and installing water control structures. This Constructed Wetland System is one of the largest systems around. It is also the most advanced. Plants have been established on a majority of the components and the entire system is just starting to function. It is clear when we look at the site that we need to plant more plants in the shallow wetland. Based on what we have learned, the shallow wetland will not function properly unless more plants are growing and "scrubbing" the water. We have always assumed that cattails would come in on their own so we shouldn't need to plant them. However, if we want a system to function correctly and efficiently, transplanting cattail plugs may be essential to get good coverage.

We are meeting with the other cooperators this month to determine what other plantings need to be done this year. The ARS in Burley has taken soil and water samples that indicate a high phosphorous content. Hopefully, with the completion of the deep water pond, this will change.

Presentations (posters, papers, talks)

We presented a number of talks, papers, poster sessions, and workshops this past reporting period. Below is a list of our presentations.

Hoag, J. Chris. 1995. *Selection and Acquisition of plants for shoreline erosion control projects and dormant pole planting techniques for shoreline and riparian improvements*. USA Corps of Engineers, Waterways Experiment Station, Shoreline Erosion Control Workshop, Denver, CO, April 24-28, 1995.

Hoag, J. Chris and Michael E. Sellers. 1994. *Constructed Wetland Systems for Water Quality Improvement of Surface Flow Irrigation Wastewater*. Northwest Riparian Symposia, Boise, ID, Dec. 7-9, 1994.

Hoag, J. Chris. 1995. *Collection and propagation techniques of wetland plants for use in establishing constructed wetlands in the arid and semi-arid West*. Society of Wetland Scientists, Pacific Northwest Section, Annual Meeting, Spokane, WA. June 21-23, 1995.

Sellers, Michael E. 1995. *Wetlands; what are they?* Issues at the Rural/Urban Interface Conference, Idaho Falls, ID, April 4, 1995.

Riparian ecology, planting techniques and woody plant acquisition workshop for USA Corps of Engineers, Walla Walla District, Walla Walla, WA. March, 1995.

Riparian ecology, rehabilitation, and livestock interactions workshop. Cooperative Extension and Drewsey Cattleman Assoc., 3 classroom workshops with 67 ranchers, FS, BLM, and state agency people. 2 field exercises with 42 participants. Burns, OR, March, 1995.

Riparian Zone Ecology, Management, and Restoration Workshops, 6 different classroom workshops presented in SE Idaho, SW Idaho, and Northern Idaho. April, 1995 - 114 participants.

Riparian Restoration Techniques Field Exercises, 1 in SE Idaho, 1 in SW Idaho, and 1 in Northern Idaho. Actual installation of bioengineering erosion control methods. April, 1995 - 70 participants.

Riparian ecology, principles, and streambank erosion control techniques workshop presented at Washington State University for landscape architecture students, Palouse river Conservation district, and private consultants. April, 1995 - 30 participants .

Wetland and Riparian Plant Species Description Guides

Two guides have been created to aid in the collection of wetland plants, shrubs, and trees. The first, *A Reference Guide for the Collection and Use of Ten Common Wetland Plants of the Great Basin and Intermountain West*, is a multiple use pamphlet. It includes descriptions of habit, stems, leaves, flowers, seeds, and ecology. Also included are collection methods, seed yields, wildlife values, where each species can be utilized for erosion control, and line drawings to help in identification. The second guide is a general collection procedure for the *Salix* genera. It provides simple directions for both seed and cutting collections and suggests what to do with the seed and cuttings after collection.

At the last business meeting, the sponsors reviewed the reference guide and suggested that it be expanded to include more species, then printed up for distribution. Wes Green, USBR Regional Office, again indicated that he might be able to get laser copies printed up of the guide.

C-6 Drain CWS, Minidoka, ID

The replacement CWS for the Poulson CWS is called the C-6 Drain CWS. This CWS also replaces the Crestview CWS which had problems with the farmers in the area converting to sprinklers. It is located just west of Minidoka. The drainage area is about 6 square miles.

We have had a couple of meetings on the project with participation from the field offices, Idaho Fish and Game, University of Idaho, Idaho DEQ, A & B Irrigation District, and Bureau of Reclamation. Objectives, needs, and goals of a Constructed Wetland System to improve water quality of irrigation wastewater were discussed. The C-6 Drain site fits most of these points.

The A & B Irrigation District and the USBR will help build the system. Brad King, Irrigation Engineer from the University of Idaho, and the Burley USDA Water Quality Demonstration Project have both agreed to help with the water quality monitoring and design suggestions. Brad has also applied for a large grant to help with the lab analysis costs.

Ceder Draw Water Quality Research and Demonstration Site

We were asked by Nancy Cole to look into a Constructed Wetland System Research study that was being established by the Twin Falls Canal Co., Idaho Fish and Game, US Fish and Wildlife Service, Idaho Power Co., and the University of Idaho. Ceder Draw was an old fish hatchery down on the Snake River that was purchased to be used as a research area to look at wetland plants and their ability to clean up nutrients and sediment from irrigation wastewater. We were asked to participate in the study because of our experience in Constructed Wetland Systems.

The study area consists of 6 old fish raceways with 2 bays each that are 16 feet wide and 125 feet long. We will plant 10 bays with 10 different species of wetland plants and the water quality will be sampled before the water goes into the bay and after it comes out. Forage samples will be taken at the end of each growing season to determine uptake. In addition, a large constructed wetland area adjacent to the raceways will be built and planted to our specifications to test the 5 component design we are developing. In both of these test areas, we will be able to use the accessions we are developing for release.

USBR H-Drain Project, Paul, ID

The H-Drain Constructed Wetland System is in cooperation with the Snake River Area - East, USBR, Burley, Idaho. We are continuing to collect information on establishment procedures, competition, community dynamics, water quality, and survival. We have received money from the BOR to continue plant establishment and nutrient uptake monitoring.

USBR Smith/Sterling Created Wetlands

Sterling Created Wetland (diked arm of American Falls Reservoir)

As planned, the islands we planted last summer are completely under water now because AFR is full. We will finish planting the remaining islands this summer as soon as the reservoir goes down far enough to expose the islands. We will also be documenting the success of last years plantings.

Smith Drain Created Wetland (impoundment of a section of irrigation drain and partial diking of an arm of American Falls Reservoir)

We will be evaluating our fall planting as soon as the water level goes down and the plants start growing. We will be planting additional plants this fall.

We will be looking at a fresh vs stored trial using *Salix exigua*. An onsite collection was made in April and stored in a cooler until June 26 when a fresh collection from the same site will be made and planted at that time.

Arimo Ranch

This project involves a 4.6 mile section of Marsh Creek located on the Arimo Ranch, which is an active cattle ranch. Marsh Creek is a 44 mile long stream that drains into the Portneuf River. The ranch owner is interested in improving the quality of his part of the stream and has contacted several federal, state, and local agencies and groups. The riparian areas have been overgrazed and have low production. Each agency involved will have a specific task in the project. Our responsibility is to select the plant species, supervise the collections of local vegetation to be used for transplanting, and finally to monitor and document the vegetation establishment. The intent is to improve the habitat for wildlife, increase forage production with controlled grazing, improve water quality, improve esthetics, increase property value, and as a demonstration site to educate the upstream and downstream ranchers as well as those in other watersheds as to what can be done in riparian areas. All grants and plans have been approved.

The basic plan is to split up the 5 mile stretch of stream into 2 sections. One section will be totally excluded from cattle grazing with fencing and the second section will be a planned grazing system. Each section will be split into planted or unplanted sub-sections. We will compare the grazed planted and unplanted sub-sections with the planted and unplanted sub-sections of the excluded area. In May and June, we planted over 500 willow cuttings in 2 sub-sections within the excluded section and 2 sub-sections within the grazed section. Idaho Fish and Game volunteers provided the planting labor, while Dick Scully provided a boat to plant out of, lunches, photo point posts, and other equipment we needed. We provided some of the plant materials, planting direction, recommended locations for planting, and a potential planting site inventory. We have been involved in the planning from the beginning.

As we indicated at the April business meeting, we have moved from pure research to application and demonstration sites. This kind of project, so close to Aberdeen, is crucial to determining if the techniques we are advocating will work in a real world situation.

Riparian Cuttings Storage and Root Studies

How long can unrooted dormant cuttings be stored until establishment success is significantly reduced? We have initiated a study to answer this question. Basically, smaller cuttings (< 18") should not be stored for more than four months. The larger cuttings (>1m length and >3cm diameter) can be stored for up to six months. Anything longer than six months and the establishment success significantly decreases. We are also looking at fresh vs. stored cutting establishment success. We have installed two separate plantings to compare onsite fresh collected cuttings against cuttings that were collected in early spring from the same site.

Should you use rooting hormones on unrooted dormant cuttings? We have always recommended against using rooting hormones because they did not significantly increase establishment success. Preliminary research indicates that hormones force unrooted cuttings to produce more root mass in a shorter time than non-hormone treated cuttings. Based on this preliminary data, we recommend using hormones in certain planting situations in the arid West such as: periods when the water table drops quickly, fast establishment is needed for drought conditions, or small diameter cuttings are all that are available. We have also found that the untreated cuttings tend to produce more above ground vegetative growth than the treated cuttings in the same period of time. This would tend to suggest that treated cuttings are sending more energy to the roots than the stems.

We recently tested the efficacy of scarring and rooting hormone treatments to promote rooting of redosier dogwood cuttings. We investigated two factors; hormone type (NAA, IBA, and no hormone), and scarring (scarred or unscarred). All cuttings were planted in 100% perlite and placed in a misting bench for 6 weeks. The total number of roots were then counted for each cutting in each treatment. Preliminary data suggests that cuttings which were scarred and treated with NAA produced significantly more roots than the other treatments ($P < 0.05$). IBA treated cuttings, both scarred and unscarred, did not perform significantly better than untreated cuttings. NAA treated cuttings produced longer roots than the IBA treated cuttings. There was no significant difference in root length between NAA treated and untreated cuttings. Differences in the numbers of shoots produced were not clear between treatments. Although these data are preliminary, they suggest that the best way to treat red-osier dogwood cuttings is to scar them and treat them with NAA.

Seagull Bay BOR Woody Nursery

A new nursery was planted at Seagull Bay on the American Falls Reservoir this spring. It will function as an increase nursery for the BOR. The Falls Creek Irrigation Company and the Shoshone-Bannock tribe built the irrigation system by using canal overflow water as it returns back to the Reservoir. A total of 150 trees and shrubs were planted. Six species, including three native species, were put in separate 300' rows with weed barrier.

Database Collection Site Database

The Interagency Riparian/Wetland Plant Development Project has been operating for nearly five years and we have gathered a large amount of information. We are in the process of recording this information into a database file. The following information will be included; species, state, county, land ownership, township, range, section, quarter section, UTM coordinates, elevation,

latitude, longitude, a brief description of area and associated plants. We will be able to manipulate this data and integrate it with evaluations in many ways. It is available upon request.

Use of Weed Barrier in Cultivated Conditions for Woody Cuttings

We have installed weed barrier (a porous plastic sheet that allows water to go through it but shades out weeds that might try to grow up through it) on the willow cuttings we have collected all over our service area and planted on the PMC Fish and Game Farm. The first year's collections did not have the weed barrier on it for the establishment year, while the second year's collections were established with weed barrier. We then compared the growth of the two year's plantings.

Willow and cottonwood cuttings were planted in 1993 and 1994. Ten species total were planted, six in 1993 and the remaining four in 1994. In 1993, two tree-type, three shrub-type and a creeping-type willow were planted (one tree-type was a cottonwood). A total of 1520 cuttings were planted. None of these had weed barrier through the first growing season. In 1994, the same species were used, with a total of 1161 cuttings planted. 1994's cuttings were planted with weed barrier. On average, we had 7.5cm H₂O/week put on each field with irrigation and precipitation. The weed barrier can keep soil moisture to 9" at 90%, while soil nearby without the barrier would have a moisture content of about 10%. In 1994, we had about a six percent increase in survival over the previous year. Tree and shrub-type willows had about the same survival rate, near 86%. Cottonwoods showed a jump of 12% in survival with the weed barrier. The greatest increase came with the creeping type willows. They had an increase of nearly 15% in survival. This is in a cultivated farming situation and is not directly comparable to a riparian planting. However, it may apply in some situations. If weed barrier is not available or not practical and the cuttings are not planted into permanent water, spraying out a 36 inch circle with glyphosate before planting will increase establishment success.

The Interagency Riparian/Wetland Plant Development Project is sponsored and funded by: USDA Natural Resources Conservation Service (Idaho & Utah), USDI Bureau of Land Management, USDI Bureau of Reclamation, US Fish and Wildlife Service, US Forest Service, Idaho Fish and Game, Idaho Transportation Dept., and Idaho Power Co.

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